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November 30, 2005

Mr. Chris Means
Regional Water Quality Control Board
Region 9
9174 Sky Park Court
Suite 100
San Diego, Ca. 92123-4340

RE: San Marcos Highlands Dam Removal

Dear Mr. Means:

This letter details the dam removal process for the existing impoundment on the San Marcos Highlands site. As detailed in the Regional Water Quality Control Board (RWQCB) meeting on November 9, 2005, RWQCB members were concerned about potential downstream sedimentation and water quality impacts associated with the removal of the dam.

Such impacts could potentially be caused by the following:

- Direct discharge of contaminated or sediment-laden runoff from the existing impoundment area behind the dam.
- Erosion and resultant sedimentation caused by the rapid release of impounded water from the dam area to Agua Hedionda Creek

The information provided below details how sedimentation and water quality impacts will be mitigated throughout the dam removal process.

Step 1 – Preliminary Investigation and Site Isolation

- Determine water surface elevation within the pond. This determination will be made by a field surveying crew.
- At the upstream end of the dam, determine the elevation of the accumulated sediment at the bottom of pond. The field surveying crew should take top of sediment elevations at several locations around the upstream end of the dam since sediment deposition is not always uniform. The top of sediment elevation will be denoted by the point at which the survey rod meets resistance. To obtain this data, a boat may be required. The survey rod should be able to extend to a depth of at least 25 feet.

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- At the upstream end of the dam, determine the elevation of the historical channel bottom. This elevation will be determined by extending the survey rod through the sediment to a point of substantial resistance. Elevations should be taken at the same locations where top of sediment elevations were determined.
- At the upstream end of the dam, determine the elevation of bedrock. This elevation may be provided by the geotechnical borings.
- Temporary berm will be constructed upstream of the upstream end of the ponded water. This berm will be constructed of soil compacted to acceptable standards to prevent dam breaching for minor storm events. Since the dam removal process will take place in the non-rainy season, ponded runoff behind the temporary dam should be minimal. Overflow conveyance in the form of an emergency spillway will be provided on the off-chance that a freak storm occurs in the dry season.
- Temporary berm will prevent additional runoff from reaching the pond and will expedite the time required for the removal of the ponded water.
- Since it is advantageous for the secondary and temporary berm to be as small as possible, the dam removal activities will take place in the dry season (May-September).
- Calculations will be provided recommending the required size of the secondary and temporary berm.

Step 2 – Water Quality Sampling in Pond

- Sample pond water at various elevations within the pond (every three feet between water surface elevation of pond and elevation of accumulated sediment at bottom of pond).
- Sample for pollutants of concern detailed in certification condition No. E.2, including sediment, nitrogen, phosphorus, and pesticides.
- If the sampling data indicates that ponded water at a certain elevation within the pond contains pollutant concentration levels below acceptable discharge standards, then the ponded water at that elevation and higher can be pumped out of the pond (with proper screening and filtering) and discharged downstream to Agua Hedionda Creek (see Step 3). To obtain more accurate sampling information to determine a more exact breakpoint between acceptable and non-acceptable pollutant concentration levels, additional sampling will be required after the pond has been dewatered (for instance, the pond could be dewatered 3 feet, and then the sampling protocol could be repeated to determine new breakpoint elevations for the next round of dewatering).
- If the sampling data indicates that ponded water at a certain elevation within the pond contains pollutant concentration levels above acceptable discharge standards, then the ponded water at that elevation and lower cannot be pumped directly out of the pond and may not be discharged to Agua Hedionda Creek (see Step 4).

Step 3 – Discharge of Pond Water to Agua Hedionda Creek

- As detailed in Step 2 above, only ponded runoff that meets acceptable discharge standards may be pumped out of the pond and to Agua Hedionda Creek.
- As an alternative to discharging the pond water to Agua Hedionda Creek, the water could be pumped to a holding basin on the developed site area and used for dust control on the construction site.
- The pump intake will be surrounded by a pump screen. A skimmer device will be utilized to pump water from the top of the pond.
- The pump will be operated at a constant flow rate of 1 cubic feet per second (or less). This flow rate corresponds to the rate at which water is drawn from the pond.
- Prior to discharge to either Agua Hedionda Creek or the onsite holding basin, pumped runoff from the pond will be filtered to remove sediment fines or any other debris that entered the pumping system and discharge pipe. Examples of filtration systems include Baker tanks and Chitosan enhanced sand filtration.
- Accumulated sediment and debris will be collected in the sump of the filtering system and be prevented from discharge.
- Accumulated sediment and debris in the sump will be removed at specified maintenance intervals that ensure that the sump does not reach full capacity.
- Accumulated sediment and debris in the sump of the filtering system will be disposed of along with other sediment to be removed from the bottom of the pond (see Step 5).
- After passing through the filtering system, runoff will be discharged at a rate of 1 cfs (or less) to a riprap energy dissipater, which will be designed to prevent scouring to either Agua Hedionda Creek or the temporary onsite holding basin in the vicinity of the pump discharge pipe outfall.

Step 4 – Removal of Contaminated or Sediment-Laden Pond Water

- Ponded water below the level at which either contaminated or sediment-laden conditions were detected may not be pumped downstream.
- Instead, ponded water in the lower portion of the pond (contaminated or sediment-laden) will be allowed to evaporate or infiltrate to the accumulated sediment layer at the bottom of the pond. This process will be accelerated by the presence of the berm upstream of the pond, which will prevent additional runoff from reaching the pond during the dam removal process.

Step 5 – Disposal of Accumulated Sediment from Bottom of Pond and Filtering Unit

- Once the pond has dewatered, the accumulated sediment at the bottom of the pond may be removed.
- The accumulated sediment, along with all sediment or debris that was collected in the filtering unit at the pump discharge pipe outfall, will be initially spread out and allowed to dry out prior to transport from the site.
- After the sediment has dried, the material will be hauled offsite for disposal at a landfill. All applicable requirements regarding sediment disposal will be followed.

Step 6 – Removal of Temporary Berm Upstream of Pond Location

- To avoid erosion to Agua Hedionda, the maximum pumping rate from the temporary pond will be 1 cfs.
- To avoid erosion, a riprap energy dissipater will be designed at the pump discharge pipe outfall.

Should you have any questions, please contact me at (858) 558-4500.

Sincerely,

Hunsaker & Associates
San Diego, Inc.

Eric Mosolgo, PE, MS
Water Resources Manager

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